Multisystem Inflammatory Syndrome in Children

June 10, 2021

Merlin extended data required (completed by case reviewer)

Background

Multisystem inflammatory syndrome in children (MIS-C) is a rare condition temporally associated with COVID-19 in persons <21 years old that includes inflammation of multiple body parts including heart, lungs, kidneys, brain, skin, eyes, and gastrointestinal organs. The cause of MIS-C is currently unknown.[1] There is no specific laboratory test available for case confirmation. Laboratory testing is aimed at identifying evidence of inflammation as listed in laboratory criteria for case classification.[2]

Clinical criteria for case classification[3]

- Age <21 years old
- **And** fever >38.0 °C or 100.4°F for ≥24 hours or report of subjective fever lasting ≥24 hours
- **And** illness requiring hospitalization
- **And** two or more of the following organ involvements:
    - Cardiac (e.g., shock, elevated troponin, B-type Natriuretic Peptide, abnormal echocardiogram, arrhythmia)
    - Renal (e.g., acute kidney injury or renal failure)
    - Respiratory (e.g., pneumonia, acute respiratory distress syndrome, pulmonary embolism)
    - Hematologic (e.g., elevated D-dimers, thrombophilia, or thrombocytopenia)
    - Gastrointestinal (e.g., elevated bilirubin, elevated liver enzymes, or diarrhea)
    - Dermatologic (e.g., rash, mucocutaneous lesions)
    - Neurological (e.g., cerebrovascular accident, aseptic meningitis, encephalopathy)
- **And** no alternative plausible diagnosis.

Laboratory criteria for case classification[4]

Confirmatory:

Laboratory markers of inflammation including, but not limited to one or more of the following:

- elevated C-reactive protein
- elevated erythrocyte sedimentation rate
- elevated fibrinogen
- elevated procalcitonin
- elevated d-dimer
- elevated ferritin
- elevated lactic acid dehydrogenase
- elevated interleukin 6
- elevated neutrophils
- reduced lymphocytes
- low albumin

Presumptive:

- Detection of SARS-CoV-2 RNA using molecular amplification test (e.g., polymerase chain reaction)
- **Or** detection of SARS-CoV-2 antigen
- **Or** detection of SARS-CoV-2 antibody

Epidemiological criteria for case classification[5]

COVID-19 exposure within four weeks prior to onset of symptom(s)[6]

Case classification

Confirmed:

One or more of the following:

- A clinically compatible illness in a person with confirmatory and presumptive laboratory criteria
- **Or** a clinically compatible illness in a person with confirmatory laboratory criteria and epidemiological criteria.

Criteria to distinguish a new case from previous reports

Not applicable.

Comments

Some individuals may meet full or partial criteria for Kawasaki disease but should be reported if they meet the case definition for MIS-C. MIS-C should be considered in any pediatric death with evidence of SARS-CoV-2 infection.[7]

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[1] Centers for Disease Control and Prevention. (2021, February). Multisystem Inflammatory Syndrome (MIS-C). Retrieved from https://www.cdc.gov/mis-c/index.html

[2] Centers for Disease Control and Prevention. (2021, February). Multisystem Inflammatory Syndrome (MIS-C). Retrieved from https://www.cdc.gov/mis-c/hcp/index.html

[3] Ibid

[4] Ibid

[5] Ibid

[6] Ibid

[7] Ibid